

CLAIMS

1. A pneumatic tire pressure sensor unit, comprising:
a sensor body comprising:
 - a housing having a mounting surface, said housing
having a cavity formed therein; and
 - 5 a nipple sealingly connected to said housing at
said mounting surface, said nipple being oriented in
upstanding perpendicular relation to said mounting
surface, said nipple having a passage passing
therethrough which communicates with said cavity; and
 - 10 a tire pressure sensor located within said cavity;
wherein said cavity is sealed by said housing and said nipple
such that said passage provides exclusive communication between said cavity
and air pressure external to said sensor body.
2. The sensor unit of Claim 1, wherein said nipple comprises:
 - an annular flange at a distal end of said nipple; and
 - a reduced cross-section portion located between said annular
flange and said mounting surface.
3. The sensor unit of Claim 2, wherein said annular flange
comprises a convex surface adjoining an annular flat, wherein said reduced
cross-section portion adjoins said annular flat.
4. The sensor unit of Claim 1, wherein said mounting surface
has a convex contour.

5. The sensor unit of Claim 1, wherein said tire pressure sensor comprises:

- 5 an electronic circuit;
 a wireless transmitter connected to said electronic circuit;
 a tire air pressure sensing element connected to said circuit; and
 a power source electrically powering said circuit, transmitter and
sensing element.

6. The sensor unit of Claim 5, wherein said nipple comprises:
 an annular flange at a distal end of said nipple; and
 a reduced cross-section portion located between said annular
flange and said mounting surface.

7. The sensor unit of Claim 6, wherein said mounting surface
has a convex contour.

8. The sensor unit of Claim 7, wherein said annular flange
comprises a convex surface adjoining an annular flat, wherein said reduced
cross-section portion adjoins said annular flat.

9. A wheel and pneumatic tire pressure sensor unit therefor,
comprising:

- a wheel having a wheel rim, said wheel rim having a hub-side
and an opposite tire-side, a port hole being formed in said wheel rim;
5 a sensor body comprising:

a housing having a mounting surface, said housing having a cavity formed therein; and

10 a nipple sealingly connected to said housing at said mounting surface, said nipple being oriented in upstanding perpendicular relation to said mounting surface, said nipple having a passage passing therethrough which communicates with said cavity; wherein said cavity is sealed by said housing and said nipple such that said passage provides exclusive
15 communication between said cavity and air pressure at said tire-side of said wheel rim; and a tire pressure sensor located within said cavity; wherein said nipple projects through said port hole, and wherein said housing and said tire pressure sensor are located at said hub-side of said
20 wheel rim.

10. The wheel and sensor unit of Claim 9, wherein said nipple comprises:

an annular flange at a distal end of said nipple; and
a reduced cross-section portion located between said annular
5 flange and said mounting surface; wherein said annular flange overlies said tire-side of said wheel rim in circumscribing relation to said port hole.

11. The wheel and sensor unit of Claim 10, wherein said annular flange comprises a convex surface adjoining an annular flat, wherein said reduced cross-section portion adjoins said annular flat, and wherein said annular flat sealingly overlies said tire-side of said wheel rim.

12. The wheel and sensor unit of Claim 11, further comprising an adhesive adhering said mounting surface to said hub-side of said wheel rim in circumscribing relation to said port hole.

13. The wheel and sensor unit of Claim 12, wherein said tire pressure sensor comprises:

an electronic circuit;

a wireless transmitter connected to said electronic circuit;

5 a tire air pressure sensing element connected to said circuit; and

a power source electrically powering said circuit, transmitter and sensing element.

14. A method for installing a pneumatic tire air pressure sensor unit to a pneumatic tire wheel, comprising the steps of:

assembling a tire pressure sensor as a sub-assembly;

5 molding over the sub-assembly a sensor body, wherein the sub-assembly is located in a cavity of a housing of the sensor body, and wherein a nipple projects from the housing;

fabricating a pneumatic tire wheel, wherein a port hole is provided in a wheel rim thereof; and

10 securing the housing to a hub-side of the wheel rim, wherein the nipple sealingly passes through the port hole to a tire-side of the wheel rim.

15. The method of Claim 14, further comprising:

mounting a tire onto a tire-side of the wheel rim; and

after said step of securing, inflating the tire to a predetermined air pressure, wherein the air pressure is communicated to the cavity through the nipple.

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16. The method of Claim 15, wherein said step of securing comprises adhesively securing the housing to the hub-side of the wheel rim.